FREDERICK-FIRESTONE
FIRE PROTECTION DISTRICT

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January 25, 2010

Town of Frederick
Attn: Mr. Jason Overholt, Chief Building Official
401 Locust Street
Frederick, Colorado 80530

Mr. Overholt,

The following language is what I would like to be added as an amendment to the current addition of the 2006 International Fire Code as adopted by the Town of Frederick.

2006 INTERNATIONAL FIRE CODE

CHAPTER 5, SECTION 511

PUBLIC SAFETY RADIO AMPLIFICATION SYSTEMS

511.1 General. Public safety radio amplification systems for the enhancement of emergency services communications within buildings shall be designed, installed and maintained in accordance with this section.

511.2 Approval and Permit. Plans shall be submitted for approval prior to installation. At the conclusion of successful acceptance testing, a renewable permit shall be issued for the public safety radio enhancement system by the AHJ.

511.3 Where required. Where adequate radio coverage cannot be established within a building, as defined by the fire code official, public safety radio amplification systems shall be installed in the following locations:

1. New buildings with a total building area greater than 50,000 square feet. For the purpose of this section, fire walls shall not be used to define separate buildings.
2. All new basements over 10,000 square feet.
3. Existing buildings meeting the criteria of Item #1 or 2 of this section undergoing alterations or additions exceeding 50% of the existing aggregate area of the building as of the date of this ordinance.

Exceptions:
1. One- and two-family dwellings and townhouses.

2. If approved by the fire code official, buildings that provide a documented engineering analysis indicating the building is in compliance with radio reception levels in accordance with Section 511.3 and final on-site testing.

511.4 Design and installation. Public safety radio amplification systems shall be designed and installed in accordance with the criteria established by the fire code official based on the capabilities and communication features of the jurisdictions providing the emergency services. Except as otherwise provided in this article, no person shall erect, construct, or modify any building or structure or any part thereof, or cause the same to be done which fails to support adequate radio coverage for emergency services providers.

1. After a building permit has been issued, upon request by the owner or the owner's agent, the fire department will, within ten to fourteen days, identify the frequency range or ranges that must be supported.
2. In the event that an emergency service provider modifies its communications equipment in any way that impairs its ability to communicate with an existing system installed in accordance with this article, such agency shall be responsible for all costs associated with reestablishing communications within the affected building or structure.
3. For purposes of this section, adequate radio coverage shall constitute a successful communications test between the building and the communications centers for all appropriate emergency service providers for the building.

Inbound into the building: A minimum average in-building field strength of (-95 dBm) throughout 100% of the area of each floor of the building when transmitted from the appropriate emergency service dispatch centers which are providing police, fire and emergency medical protection services to the building.

If the field strength outside the building where the receiver antenna system for the in-building system is located, is less than the -95 dBm, then the minimum required in-building field strength shall equal the field strength being delivered to the receive antenna of the building.

As used in this part, 100% coverage or reliability means the radio will transmit 85% of the time at the field strength and levels as defined in this part.

Outbound from the building: A minimum average signal strength of (-95 dBm) as received by the appropriate emergency service dispatch centers which are providing police, fire and emergency medical protection services to the building.

FCC Authorization: If amplification is used in the system, all FCC authorizations must be obtained prior to the use of the system. A copy of these authorizations shall be provided to the Town of Frederick.

511.5 Enhanced Amplification Systems. Where buildings and structures are required to provide amenities to achieve adequate signal strength, such buildings and structures shall be equipped with any of the following to achieve the required radio coverage: radiating cable systems, internal multiple antenna systems with a frequency range as established in Section 511.4, with amplification systems as needed.

If any part of the installed system or systems contains an electrically powered component, the system shall be capable of operation on an independent battery and/or generator system for a period of at least 12 hours without external power input or maintenance. The battery system shall automatically charge in the presence of external power input.

The public radio enhancement system shall include automatic supervisory and trouble signals for malfunction of the signal booster(s) and power supplies that are annunciated by the fire alarm system.

511.6 Final Acceptance Test. A minimum signal strength of -95 DBM must be receivable in 90% of the area of each floor of the building when an 700/800 MHZ radio signal is transmitted from the nearest public safety radio communication site.

A minimum signal strength of -95 DBM must be received at the nearest public safety radio communication site when an 700/800 MHZ radio signal is transmitted from 90% of the area of each floor of the building.

The 700/800 MHZ frequency range must be able to be received and transmitted within 90% of the structure 95% of the time.

511.7 Testing Procedures. Tests shall be made using frequencies close to the frequencies used by the emergency services agencies. If testing is done on the actual frequencies, then this testing must be coordinated with the appropriate emergency services agencies. All testing must be done on frequencies that are authorized by the FCC. A valid FCC license will be required if testing is done on frequencies different from the police, fire or emergency medical frequencies.

Where in-building radio coverage is required, and upon completion of the installation, it will be the building owner's responsibility to have the radio system tested to ensure that two-way coverage on each floor of the building is a minimum of 90%.

Each floor of the building shall be divided into a grid of approximately 20 equal areas. A maximum of two (2) nonadjacent areas will be allowed to fail the test. In the event that three of the areas fail the test, in order to be more statistically accurate, the floor may be divided into 40 equal areas. A maximum of four (4) nonadjacent areas will be allowed to fail the test.

511.8 Annual Tests. Annual tests shall be the building owner's responsibility to have all active components of the system, such as signal boosters, power supplies ,and backup batteries tested at a minimum of once every 12 months. If the communications appear to have degraded or if the tests fail to demonstrate adequate system performance, the owner of the building or structure is required to remedy the problem and restore the system in a manner consistent with the original approved criteria.

If the degradation to the system is due to building additions or remodeling, the owner of the building or structure is required to remedy the problem and restore the system in a manner consistent with the original approval criteria in order to obtain a final inspection for occupancy.

Any system degradation or failure not related to the performance of the owners on-site system will be the responsibility of the appropriate emergency service agency.

511.9 Maintenance. Public safety radio amplification systems shall be maintained in an operative condition at all times and shall be replaced or repaired where defective. A complete and accurate maintenance log shall be kept at the site at all times, and shall, at a minimum, include the following information:

1. Installing Contractor
2. Site Address
3. Maintenance Performed
4. Maintenance Contractor

The installing cost estimate is running about $.38 cents a square foot for 0-150,000 SF to $.50 cents a square foot from 150,000 SF and above.

Please look this over and forward this information to the Frederick Police Department for their review and comments.

Thank you,

Division Chief David P. Puccetti